

REMARKS

Claims 12-40 are pending in the present application. Claims 51 and 52 have been added by this amendment. In the Office Action dated January 9, 2007, claims 12-16, 20-23, 28, 30 and 37-39 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,877,844 to Matsumoto ("Matsumoto"). Claims 17, 24-27, 29, and 33-36 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto in view of U.S. Patent No. 5,806,424 to Elliot ("Elliot"). Claims 18 and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto in view of U.S. Patent No. 6,359,662 to Walker ("Walker"). Claims 31 and 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto in view of U.S. Patent No. 4,958,150 to Dabbaj ("Dabbaj"). Claim 40 was rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto in view of U.S. Patent No. 5,699,145 to Makinouchi ("Makinouchi").

Discussion of the Disclosed Embodiments

The disclosed embodiments of the invention will now be discussed in comparison to the prior art. Of course, the discussion of the disclosed embodiments, and the discussion of the differences between the disclosed embodiments and the prior art subject matter, do not define the scope or interpretation of any of the claims. Instead, such discussed differences merely help the Examiner appreciate important claim distinctions discussed thereafter.

The disclosed embodiments of the present invention are directed to concealing defective display element defects in a display device. In one embodiment, a display device includes a two-dimensional array of display elements disposed on a display surface within the field of view of a user. At least one of the display elements is at least partially defective. A signal source provides a signal to each of the display elements so that a visual image is formed on the display surface. A translation unit connected to the display surface imparts motion to the display surface such that the display surface may be moved horizontally, vertically or a combination of horizontal and vertical directions. A control unit included in the display device controls the translation unit and signal source to move the display surface while controlling the signal source to correspondingly shift the image signals.

Thus, when the image signals are shifted and displayed, the defective display elements are concealed while presenting a stable image to a stationary viewer. In some

embodiments of the invention, the control unit causes the translation unit to shift the display device with sufficient rapidity that the intermittency of the image displayed is less apparent to the viewer, who will perceive a stable, non-flickering image. In some embodiments, a frequency of repetition of greater than about 50 Hz is suitable to achieve this effect.

Discussion of the Cited References

Matsumoto describes a system completely different from that disclosed by Applicant. Matsumoto discloses a system for creating an image on a film (38) bearing a photosensitive material. Defects in a LCD screen (20) are corrected by moving the LCD screen (20) between exposures. A shutter (34) and a lens (32) are positioned between the LCD screen (20) such that the LCD screen is not visible to a viewer, as shown in Figure 1 to the right. The shutter (34) is opened and closed to expose the film.

Matsumoto does not disclose a system for translating a screen at a frequency effective to create a stable image. Matsumoto instead shifts the LCD screen (20), opens the shutter (34), moves the LCD screen (20) and opens the shutter (34) again, and so on to create an image on the film (38). Matsumoto does not oscillate the LCD screen (20) at a frequency effective to create a stable image as apparent to a human viewer. Matsumoto further provides no teaching or suggestion to do so.

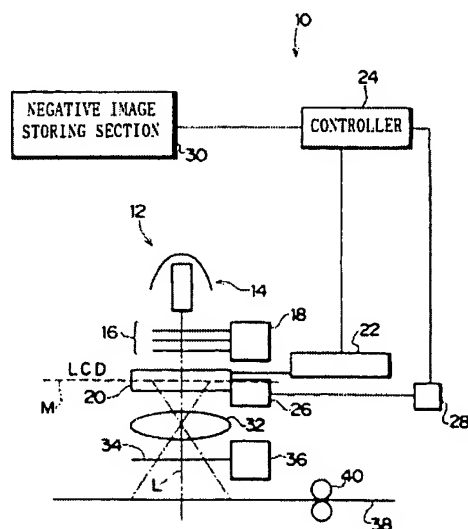
Elliot, Walker, Dabbaj, and Makinouchi fail to remedy the deficiencies of Matsumoto.

Discussion of the Claims

Turning now to the claims, the differences between the cited references and the claimed invention will be particularly pointed out.

With respect to claim 12, the cited references fail to teach or suggest, whether alone or in combination, an apparatus including, in combination with the other limitations of the claim, “a control unit coupled to the translation unit and the display signal source that is

FIG. 1




structured to exchange signals with the translation unit and the display signal source to controllably direct the movement of the display unit and to compensatingly shift the input signals to the display elements on the surface of the visual display, the shifted input signals concealing display element defects on the display surface when displayed; wherein the control unit is further structured to cause the translation unit to translate the visual display unit at a frequency effective to create a visually stable image as apparent to a typical human viewer.” (emphasis added).

With respect to claim 23, the cited references fail to teach or suggest, whether alone or in combination, an apparatus including, in combination with the other limitations of the claim, “a display device having a viewing surface positioned within a field of view of a human viewer and a two dimensional array of contiguous display elements disposed thereon, wherein at least one of the display elements is defective; a signal source unit capable of directing a plurality of image signals to the plurality of display elements on the viewing surface; a translation device coupled to the display device; and a control unit coupled to the signal source unit and the translation unit that is operable to command the translation unit to shift the display in a predetermined direction by an amount corresponding to a size of the at least one defective display element and to command the signal source unit to correspondingly shift the image signals provided to the display device by the signal source unit to compensate for the display device, and to command the display thereof to obtain a stable image that conceals the at least one defective display element; wherein the control unit is further structured to cause the translation unit to periodically translate the visual display unit at a frequency effective to create a visually stable image as apparent to the human viewer.” (emphasis added).

Claims 13-22 and 24-40 are allowable as dependent on allowable claims 12 and 23, respectively. All of the claims remaining in the application are clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

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